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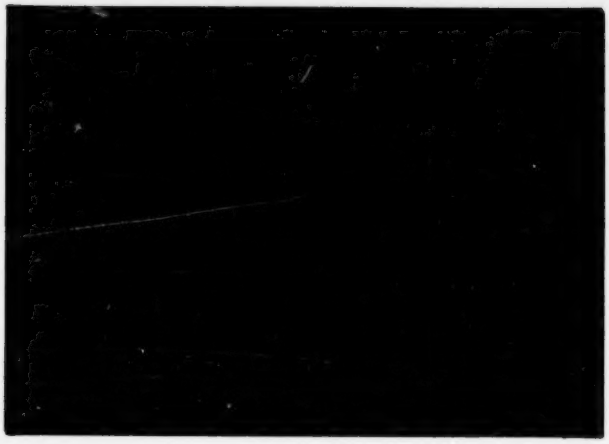

WORKING PAPER

THE CONVENTIONAL FORCE BALANCE IN EUROPE: UNDERSTANDING THE NUMBERS

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PREFACE

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CONDENSE

Le présent document examine les divers facteurs dont il convient de tenir compte pour analyser l'équilibre des forces militaires classiques en Europe. Parmi ces facteurs, citons : la durée des combats et le temps dont les adversaires disposeraient pour mobiliser avant que la guerre commence effectivement; les autres obligations militaires que l'un et l'autre camps pourraient avoir au moment où la guerre éclaterait, outre ceux qu'ils ont en Europe centrale; la solidarité des deux alliances multinationales, sous la pression qu'exercerait la guerre; l'influence sur l'issue de la bataille des différences qualitatives aux chapitres de l'entraînement des troupes et de l'équipement, par opposition à la puissance d'effectifs plus nombreux; et enfin, les avantages et les inconvénients relatifs des manoeuvres offensives ou défensives au combat.

L'auteur conclut qu'il est difficile d'évaluer l'équilibre des forces classiques et que des comparaisons globales des forces risquent de voiler, au sujet des facteurs susmentionnés, des hypothèses qu'il est essentiel de connaître pour comprendre l'équilibre tel qu'il est présenté par les analystes.

Introduction

What is the balance of conventional forces between East and West? This is a question that has bedevilled NATO military planners for the past forty years, and one that is now receiving greater prominence with the imminent prospect of the elimination of intermediate-range nuclear forces from Europe. This renewed interest has sparked the publication of many assessments of the balance, yet, strangely, seldom are two alike. Why are these such divergent answers to what seems to be a straight-forward question?

The Level of Analysis

One reason lies in the level of analysis at which the East-West conventional force balance is measured. At the **global** level of analysis, the raw military potential of each alliance is compared. Population estimates and indicators of national economic performance, e.g., Gross Domestic Product, are standard measures used to approximate the manpower and material resource base from which military forces can be mobilized in times of war. One estimate of this balance is presented in the following table:

TABLE 1

The Balance of Potential Military Power (1985 est.)

	NATO	RATIO	WARSAW PACT
Population (million)	642	1.6:11	393
Gross Domestic Product* (billion)	$6,750	2.4-3.6:1	$1,864-$2,764

Source: International Institute for Strategic Studies, The Military Balance 1986-87 IISS, London, 1986, pp. 15-79.

* For 5 out of 7 of the Warsaw Pact countries GNP was used instead, thus overstating the figure to some extent.

The table illustrates the superiority of the West's potential manpower and economic resources compared with those of the Warsaw Pact nations. From this, it is usually concluded that NATO would have greater staying power than the Warsaw Pact in a protracted conventional war. The weight of resources favouring the West should guarantee ultimate victory over the long-term.

Different conclusions are drawn by those studying the balance of actual military power. Focusing on military potential, it is argued, ignores the balance of existing military forces. The long war cannot be won if the short war is lost. The resource superiority of the Western alliance matters little if the opening battles of the conflict are lost. In the short-term, the outcome on the battlefield will be decided by the active and reserve forces currently fielded by each alliance.

Concern with the short-term outcome of an East-West confrontation prompts analysis of the conventional military balance at the **theatre** level, in particular along the Central Front in Europe. The Central Front runs along the inter-German border from the Elbe River in Lower Saxony to the south-western tip of the Czechoslovakian border, a distance of 725 km. (The West German state of Schleswig-Holstein north of the Elbe River comes under the operational command of NATO's Northern Region.) Seven countries contribute forces to the defence of the border, and these forces are arrayed in "layer-cake" fashion along the length of the Front.

The Northern Army Group (NORTHAG), consisting of Dutch, German, British, and Belgian corps, defends the northern section of the Front from the Elbe to the Harz Mountains, a distance of 225 km. The remaining 500 km are the

responsibility of the Central Army Group (CENTAG) composed of two German and two American corps. Additionally, three French armoured divisions and one Canadian mechanized brigade are based in the rear area of CENTAG forming an immediate operational reserve to reinforce any threatened sectors of the line.[1] Similarly, in NORTHAG, one American army corps serves as an operational reserve using material prepositioned in the Bremen area (currently, one brigade is stationed in Europe with the remainder of the force based in the United States). In peacetime, only some of the forces earmarked for these eight corps sectors are deployed in West Germany, with immediate reinforcements stationed outside the theatre. Table 2 summarizes the deployment of forces dedicated to the defence of the Central Front.

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[1] French forces are not part of NATO's integrated military command. However, arrangements have been made for the wartime coordination of French military operations with those of the Alliance.

TABLE 2

NATO Ground Order of Battle, Centre Front (1986)

ACTIVE FORCES

Country	Stationed in West Germany [a]	Stationed Elsewhere (Immediate Reinforcements)
Belgium	1 Corps HQ 1 Div HQ 1 Armed Bde 1 Mech Inf Bde	1 Div HQ 2 Mech Inf Bde
Canada	1 Div HQ 1 Mech Bde Gp	1 Bge Gp [b]
France [c]	1 Corps HQ 3 Armd Div	1 Corps HQ 2 Armd Div 1 Inf Div 1 Airmobile Div
Great Britain [c]	1 Corps HQ 3 Armd Div	1 Inf Div HQ 4 Inf Bde
Netherlands	1 Armd Bde	1 Corps HQ 1 Armd Bde 4 Mech Bde
United States [c]	1 Army HQ 2 Corps HQ 2 Armd Div 2 Mech Div 1 Armd Bde 1 Mech Bde 1 Cav Bde 2 Armd Cav Regt	1 Corps HQ [d] 2 Armd Div 3 Mech Div 2 Inf Div 1 Inf Bde 1 Armd Cav Regt
West Germany	3 Corps HQ 6 Armd Div 4 Armd Inf Div 1 Mountain Div 1 Airborne Div 2 Home Defence Bde	10 Home Defence Bde

Glossary:

Armd	armoured	HQ	headquarters
Bde	brigade	Inf	infantry
Cav	cavalry	Mech	mechanized
Div	division	Regt	regiment
Gp	group		

Footnotes:

[a] Smaller unit formations attached to corps sectors not included.

[b] Force changes proposed in the Defence White Paper, Challenge and Commitment: A Defence Policy for Canada (1987). An additional brigade group based in Canada provides trained manpower to raise the levels in Europe to their full complement.

[c] Forces stationed in West Berlin not included.

[d] The heavy equipment for 1 armoured division, 2 mechanized divisions, and 1 armoured cavalry regiment are prepositioned in West Germany. Construction of facilities for the equipment of three additional divisions is ongoing.

Sources:

International Institute for Strategic Studies, The Military Balance 1985-86 IISS, London, 1985, pp. 3-15, 37-60, and Ibid., The Military Balance 1986-87, pp. 15-30, 55-79; William P. Mako, U.S. Ground Forces and the Defense of Central Europe, The Brookings Institution, Washington, 1983, pp. 50-51. "Centre-piece: NATO's Central Front," The Economist, 30 August 1986; and, Tom Gervasi, The Myth of Soviet Military Superiority, Harper and Row, Publishers, New York, 1986, pp. 440-486.

Arrayed against NATO are the forces of the Warsaw Pact. The Western Theatre of Military Operations (TVD), as the Central Front is known by Soviet military planners, includes the forces of the "Fronts of the 1st strategic echelon" - Soviet and East European forces in East Germany, Poland, and Czechoslovakia - as well as those of the "Fronts of the 2nd strategic echelon" - Soviet forces based in the Baltic, Byelorussian, and Carpathian military districts of the Soviet Union.[2]

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[2] The first echelon constitutes the leading edge of Soviet conventional attack forces in Central Europe, with the second echelon providing follow-on reinforcements.

Like NATO, not all Warsaw Pact forces are stationed in close proximity to the inter-German border,[3] nor are they maintained at full combat readiness. Warsaw Pact divisions are categorized according to three readiness levels.[4] Category One units are completely equipped and can be fully manned within 24 hours. Category Two units also have complete equipment but are only 50-75% manned, requiring three days for mobilization. Category Three units may have complete equipment (older models retired from front-line forces) but maintain only 20% manpower; at least nine weeks are needed to raise the readiness of these units to the highest level. Table 3 summarizes the readiness and peacetime locations of Warsaw Pact forces committed to the Western TVD.

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[3] Warsaw Pact lines of communication extend overland from the Western Soviet Union to the Inter-German border; NATO links to North America cross the Atlantic Ocean. Thus, Soviet and East European reinforcements can travel overland to the front while those from the United States and Canada must travel by air and/or sea to West Germany. Prima facie, reinforcements should be less difficult for the Warsaw Pact than for NATO. However, other factors may offset this apparent advantage. For example, during the D-Day invasion and its aftermath in June-July 1944, Allied forces entered the Normany bridgehead faster than German armoured forces could reach the front after their release from the operational reserve. German troop movement to the battlefield was slowed dramatically by complete Allied air superiority. Allied air forces destroyed bridges and rail lines, and attacked German columns moving along the roads to Normandy. At the same time, the Allied navies' local command of the sea prevented German naval forces from interfering with troop transports travelling from England to the coast of France. This is not to suggest that sea lines of communication are inherently superior to those on land. At most, this example illustrates the need to consider a variety of factors before judgements are made in this regard.

[4] Unlike the Warsaw Pact, NATO forces are not categorized according to standard alliance readiness levels. Unit readiness is determined by the training and equipment standards for each national army, among other factors.

TABLE 3

Warsaw Pact Forces in the Western TVD, (1986)

Fronts of the 1st Strategic Echelon: [a]

Country	Active Forces [b] Stationed in East Germany	Stationed Elsewhere (Immediate Reinforcements)
Czechoslovakia		3 Armd Div [2] 5 MR Div
East Germany	2 Army HQ 2 Tk Div 4 MR Div	
Poland		5 Armd Div 5 Mech Div [3] 1 AB Div 1 Amph Assault Div
Soviet Union	1 Gp HQ 5 Army HQ 10 Tk Div 9 MR Div	2 Gp HQ 3 Army HQ 4 Tk Div 3 MR Div

Fronts of the 2nd Strategic Echelon: [a]

Soviet Union		11 Tk, MR Div [23] 2 Airborne Div

Glossary:

AB	airborne	Mech	mechanized
Amph	amphibious	MR	motor rifle
Armd	armoured	Tk	tank
GP	group		

Footnotes:

[a] Forces of the first echelon stationed outside East Germany are based in Poland and Czechoslovakia. Forces of the second echelon are located in the three western military districts of the Soviet Union.

[b] All divisions listed are Category One/Two. The figures in brackets indicate the number of Category Three divisions.

Sources:

The Military Balance 1985-86, pp. 16-36, and The Military Balance 1986-87, pp. 31-54; "Warsaw Pact Forces in Europe: A New Survey—Part One," Jane's Defence Weekly, 28 March 1987, pp. 650-653; Gervasi, pp. 440-486; and, Mako, p. 44.

Conflict Scenarios - The Assumptions

Why do assessments of the conventional theatre force balance differ? Most agree that the peacetime balance of forces - those currently stationed in East and West Germany - would not necessarily constitute the actual order of battle in a possible armed confrontation. The forces included or excluded from consideration depend upon the conflict scenario as defined by the analyst. Factors determining the scenario include mobilization and warning time, other theatre commitments, and the reliability of allied forces.

1. Mobilization and Warning Time - With the order to mobilize, active and reserve forces are raised to peak combat readiness and then transported to the theatre of operations. The rate at which mobilization proceeds depends upon the training and equipment of forces and their distance from the front lines, rates which differ within and between armies. All assessments measure the balance of forces, whether implicitly or explicitly, at some stage in the mobilization process, ranging from M+4 (i.e. four days after mobilization begins) to M+120. This accounts in part for differences in the absolute and relative balance of forces as presented in various analyses. For example, some may include forces ready for combat after only four days of mobilization while others may include those mobilized after ninety days. The choice depends upon the analyst's estimation of the time available for mobilization before hostilities erupt.

Another consideration affecting mobilization rates is warning time. Will NATO leaders receive advanced warning of an impending Warsaw Pact attack, and, more importantly, will they respond quickly to such warning, authorizing the mobilization of active and reserve forces? Hesitations in response - the result, for example, of ambiguous military intelligence or desires to avoid provocation - may delay the start of the process.[5] Thus, Warsaw Pact mobilization may be several days or several weeks advanced before the decision to mobilize is taken in the West. An analyst's assumptions regarding warning time and the response of political leaders to warning further colour his assessment of the relative balance of forces at any given point in time.

2. Other Theatre Commitments - Active and/or reserve forces currently earmarked for the Central European theatre may not be available for use in times of war. Despite timely mobilization, these forces may be required to reinforce commitments in other regions of the world. The United States, for example, maintains alliances, treaties, and Executive

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[5] NATO's reaction to the Warsaw Pact, invasion of Czechoslovakia on 20 August 1968 illustrates the procedural difficulties surrounding the timely response to warning. Upon notice of the invasion, NATO military authorities in the Central Army Group and European Command raised the alert status of their forces to the level of military vigilance, the maximum permissible without further authorization by NATO's Council of Ministers. These precautionary measures were taken as a hedge against the possibility, however slight, that military movements in Czechoslovakia were a prelude to an invasion of Western Europe. The Council of Ministers then met to decide on the authorization of alert measures beyond those already taken. Amid concerns that further military preparations might appear provocative to the Soviet Union, the Council was unable to obtain the unanimous consent of all fifteen national representatives needed for the implementation of additional alert measures. For a detailed discussion of this case, see Richard K. Betts, Surprise Attack: Lessons for Defence Planning, Washington, The Brookings Institution, 1982, pp. 81-86.

Agreements with countries in Asia, Africa, and Latin America. These commitments may require the dispatch of forces during times of international crisis to preserve allied and American interests, thus limiting the availability of forces for the Central Front. Likewise, the Soviet Union devotes significant forces (approximately fifty-three divisions during peacetime) to the protection of its land border with the People's Republic of China, a requirement that would demand additional forces in the event of open hostilities with the Chinese. The analyst's assumptions regarding the commitment of forces to other regions bears directly on his portrayal of the force balance along the Central Front.

3. Reliability of Allied Forces - Questions of reliability focus on the resolve of allied countries to discharge their military obligations during times of war. For example, the reliability of the East Europeans is thought likely to depend on the politico-military circumstances surrounding the outbreak of war, the expected duration of the fighting, and the anticipated success (or failure) of Warsaw Pact forces on the battlefield. Soviet allies may be reluctant to participate fully in an unprovoked or costly war of expansion against the West. They may be less reluctant to fight, however, if facing the perceived threat of "resurgent West German revanchism."[6]

Concerns of alliance solidarity are not unique to the Warsaw Pact. France does not participate in the integrated military command of NATO, although provisions have been made for the war-time cooperation of French and NATO forces. This

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[6] This is the desire to reunite the two Germanies as one political entity, attributed to the West Germans by Soviet commentators. This raises the spectre, in East European minds, of a powerful and united Germany once again marching eastward as in the Second World War.

causes some to doubt the French commitment to the forward defence of the Central Front, and, hence, to exclude these forces from estimates of the balance.[7] Similarly, doubts are sometimes raised regarding the willingness of the smaller NATO nations to commit their combat forces in all circumstances. Soviet protestations of American and/or German provocation and Soviet promises to avoid direct engagement with national forces may convince some West European nations to withhold their forces from combat. Although the present commitment of the smaller European nations to the Alliance is acknowledged as strong, some analysts may assume that the spectre of imminent conflict may prompt these nations to reconsider their military commitments to the Central Front; this assumption would be reflected in the exclusion of these forces from the NATO order of battle.

Qualitative Factors Affecting the Balance

The preceding discussion demonstrates the importance of the assumptions underlying the assessments of the conventional force balance. Bearing these in mind, how then should one interpret portrayals of the conventional force balance? Specifically, what is the significance of quantitative asymmetries in the balance for the outcome on the battlefield? Can numerical superiority in manpower, tanks, and artillery guarantee victory in conventional war?

The lessons of history suggest that superior numbers cannot always ensure victory on the battlefield. For example,

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[7] Concern with the French commitment to West German security has faded in recent years. Since the early 1980's, French officials have stated repeatedly that France's 'vital interests' are no longer confined to the area west of the Rhine, but, instead, begin at the Elbe (the river separating East from West Germany). The growing recognition of the two countries' common security interests is best symbolized by the proposed creation of a joint Franco-German army brigade.

Nazi and Allied forces massed along the Franco-German border in 1940 were approximately the same size, yet France was defeated and Britain evicted from the Continent in only six weeks. From May to July 1942, Axis forces under the command of Field Marshal Erwin Rommel swept through the deserts of western Libya to El Alamein and the gateway to Egypt despite fielding smaller armoured forces than the British. These examples suggest that factors other than the numerical balance of forces - including the quality of forces, the relative advantages of offense and defence, and geography - also influence the outcome on the battlefield.

1. The Quality of Forces - Numbers cannot, in all circumstances, substitute for quality in forces. Troop training and experience, as well as equipment reliability and effectiveness, are factors that, although difficult to measure, are critical to success on the battlefield. In the immediate post-war period, the Western Alliance relied on the technological superiority of its weapons to offset the numerical superiority of Soviet and East European forces along the Central Front. Many believe that this advantage has narrowed over time, although the West still enjoys a substantial lead in areas of micro-electronics and computer technology - technologies critical for the command and control of modern conventional forces. Troop training is even more difficult to assess. Different training standards geared to the execution of different tactical and strategic plans make comparisons within alliances, much less between alliances, difficult. The relative strengths of each training system only become apparent under actual combat conditions.

2. Offensive/Defensive Advantages - The offence has the advantage of choosing the time and place of attack, exploiting any weaknesses in the defence and capturing the element of surprise. The defence, however, has the advantage of fighting

from prepared defensive positions, thereby reducing its exposure to enemy fire while engaging the more-exposed attacking forces as they move across the battlefield.[8] How do the relative advantages of offence and defence balance? The traditional 'rule of thumb' holds that the offence must outnumber the defence three-to-one in order to have a reasonable expectation of success on the battlefield. The 1976 version of the United States Army field manual - FM 100-5, Operations - states that a defending unit can stop a force up to five times its size for short periods, assuming heavy air and artillery support on favourable terrain, and recommends force concentrations of six-to-one for offensive operations. In general, then, it seems fewer forces are needed to defend than to attack.

At some point, the defence reaches the optimum size relative to the area defended. This is referred to as the **force-to-space ratio**, i.e., the ideal concentration of combat power over a given length of the front. In modern armies, this ratio is thought to vary from seven to fifteen km for a brigade.[9] A unit defending a front of this length is thought

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[8] One weakness in NATO's defensive posture is thought to be the lack of prepared defensive fortifications along the inter-German border. Although some crticize over-reliance on such fortifications--recalling the ease with which the Maginot Line along the Franco-German border was outflanked by the German Army in 1940--most concede that prepared fortifications while unable to stop a determined attacker, nevertheless slow him down sufficiently to allow mobile reserve forces to position themselves for further defence. However, the construction of a fortified belt along the inter-German border is politically unacceptable to West Germany, symbolizing as it does the permanent division of Germany.

[9] This estimate of the 'ideal' force-to-space ration is approximate at best. The assignment of actual brigade frontages depends upon several factors. Rugged terrain demands a greater concentrationof combat forces, thereby reducing the optimal size of the brigade front. Frontages may be extended for highly mobile defending forces. Shortages of

to have sufficiently concentrated combat power to withstand the assaults of forces many times its size for extended periods before requiring reinforcement. Over time, the defence will be worn down in the face of overwhelming odds, but only at great cost in time and manpower to the attacker.

3. Geography - The ideal terrain for offensive mechanized operations consists of open, rolling plains allowing maximum speed and manoeuvrability for massed formations of tanks and armoured fighting vehicles. The more obstacles - natural and/or man-made - blocking the advance of attacking armoured forces and concealing defending forces, the greater the advantage enjoyed by the defender. The terrain in West Germany provides some formidable obstacles to a rapid armoured offensive by the Warsaw Pact. The forests and mountains of southern Germany and the urban sprawl spreading throughout the North German Plain limit the possible axes of attack open to invading forces from the East. Moreover, the 'canalization' of Warsaw Pact forces along these axes of attack allows NATO to concentrate its defences in these areas, further enhancing the prospects for successful defence of West German territory, all things being equal.[10]

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available forces may require units to defend longer fronts to prevent the opening of gaps along the line. These and other considerations illustrate the caution with which estimates of force-to-space rations must be regarded.

[10] Certainly, other axes of attack in less hospitable terrain may be used but only at the cost of restricted mobility and slower rates of advance for attacking mechanized forces. However, the effect of tactical surprise--attacking through lightly-defended sectors in which no offensive is expected given the rough terrain--may compensate for these operational problems.

Conclusion

To conclude, measuring the balance of conventional forces along the Central Front is a complex and uncertain task. Aggregate force comparisons conceal many assumptions critical to the appreciation of the balance as portrayed by the analyst. For instance, ominous portrayals of overwhelming Warsaw Pact conventional superiority may reflect pessimistic judgements of NATO responsiveness to indicators of Warsaw Pact mobilization, out-theatre demands on American military forces, and/or the reliability of allied forces. Alternatively, more sanguine appreciations of these factors may lead to less threatening assessments of the balance. In the end, numerical estimates of the balance are only reflections of the qualitative assumptions underlying them.

Moreover, these comparisons present only part of the picture. Many other factors, while difficult to quantify, also bear directly on battlefield terrain, and the inherent advantages and disadvantages of offence and defence, are but a few of the qualitative factors essential to a fuller understanding of the conventional force balance between East and West.